

**REMARKS**

The Applicants thank the Examiner for the very thorough consideration given the present application.

**Status Of The Claims**

Claims 1-8, 12-16, 19 and 20 are pending this application. Claims 1 and 12 are independent. Claims 9-11, 17 and 18 are cancelled.

**Rejection Under 35 U.S.C. § 112, 1st Paragraph**

Claims 9-11, 17 and 18 are rejected under 35 U.S.C. § 112, 1st paragraph. This rejection is respectfully traversed.

Although the Applicants do not acquiesce to the propriety of the rejection, claims 9-11, 17 and 18 are cancelled, thereby mooted this rejection.

Accordingly, withdrawal of this rejection is respectfully requested.

**Rejection Under 35 U.S.C. § 103**

Claims 1-6 and 12-14 are rejected under 35 U.S.C. §103(a) as being obvious over Munakata (U.S. Patent 6,373,540) in view of Umemoto (U.S. Patent 6,196,692), Ono (U.S. Patent 5,847,781) and Chang (U.S. Patent 6,166,400). The Examiner adds the teachings of Onishi (U.S. Patent 5,450,220) to this rejection to reject claims 7, 8, 15, 16, 19 and 20. The

Examiner combines the teachings of Lee (U.S. Patent 6,177,973) to Munakata, Umemoto, Ono and Chang to reject claims 9-11, 17 and 18 (now cancelled). Applicants traverse.

*The Present Invention And Its Advantages*

The present invention pertains to a liquid crystal display that has a high aperture ratio, a high contrast ratio and an enhanced display quality. Although there are many embodiments of the invention, one of the many novel aspects of the invention resides in that the substrate containing the switching element is arranged so that there are light absorbing materials sandwiching the switching element. To this effect, claim 1 recites a "first light absorbing film under the gate electrode" and "a black matrix formed on the passivation film and over the switching element." Claim 12 contains similar embodiments. The light absorbing film is further set forth in claims 3-6.

The present invention finds a typical embodiment in claim 1:

1. A liquid crystal display device, comprising:
  - a display panel including a lower layer at the lowest portion of the display panel and an uppermost layer, positioned above the lowest layer at the uppermost portion of said display panel;
  - a first substrate forming said uppermost layer of said display panel, including:
    - a) a switching element on the first substrate, said switching element being connected to a gate line and a data line, the switching element being a thin film transistor having a gate electrode formed on the first substrate, a gate insulating layer formed on an exposed surface of the first substrate while covering the gate electrode, an active layer on the gate insulating layer over the gate electrode, an ohmic contact layer on the active layer, a source electrode on the ohmic contact layer, a drain electrode on the

- ohmic contact layer, and a first light absorbing film under the gate electrode;
- b) a passivation film formed over the whole surface of the first substrate while covering the switching element;
- c) a pixel electrode on the passivation film;
- d) a black matrix formed on the passivation film and over the switching element;
- e) a color filter formed over the pixel electrode; and
- f) a first orientation film formed on the black matrix and the color filter and above the pixel electrode;

a second substrate having no switching element disposed thereon, forming said lowest portion of the display panel, said second substrate being aligned with the first substrate, said second substrate having a common electrode and a second orientation film, said second orientation film being formed on the common electrode;

a sealant for sealing said first and second substrates;

a liquid crystal layer interposed between said first and second substrates; and

a backlight device disposed beneath said second substrate such that said second substrate is located between said backlight device and said first substrate.

*Distinctions Of The Invention Over The Applied Art*

Distinctions of the invention over Munakata, Umemoto, Ono and Lee have been placed before the Examiner. Chang and Onishi are newly applied.

At page 7 of the Office Action, the Examiner acknowledges some of the deficiencies of the applied art. The Examiner admits that Munakata discloses a possible light source at, but does not disclose a second substrate formed adjacent a backlight device that is disposed beneath a second substrate such that the second substrate is located between the backlight device and the first substrate. The Examiner further admits that Munakata and Umemoto fail to disclose (a) the ohmic contact layer forming between the active layer and

source and drain electrodes, wherein the source electrode overlaps one end portion of the active layer and the drain electrode overlaps the other end portion of the active layer (claim 2), (b) a first light source absorbing film under the gate electrode, (c) a second light absorbing film under the source electrode and a third light absorbing film under the drain electrode (claims 3-4 and 13-14), and (d) the first light absorbing film under the gate line and the second light absorbing film under the data line (claims 5-6).

The Examiner turns to Chang and Ono to supply these deficiencies.

That is, the Examiner turns to Ono for teachings pertaining to the light absorbing film under the switching element. The Examiner turns to As and d<sub>0</sub> in Figures 3 and 7 of Ono. The Examiner turns to Column 7, lines 5-16 of Ono, which states:

In the structure of this embodiment, since the light-blocking film SKD and the gate line GL act to reflect light from a back light source, return it to a light guide disposed in back of the back light source, and the light guide reflects and directs the light again toward the aperture of the pixel, the display becomes brighter than the brightness determined by the aperture ratio. In particular, for the structure in which the semiconductor layers AS and d<sub>0</sub> are formed under the data line DL, **since the semiconductor layers exhibit a light absorbing function**, without the light blocking film SKD in back of the semiconductor layers under the data line DL, reflection of light decrease, resulting in dark display. (Emphasis added).

However, Figure 3 of Ono clearly show As and d<sub>0</sub> being formed over the gate line GL. In contrast, Figures 5, 6, 9 and 10 of the present invention show the light absorbing film 34 being formed between the gate 22 and the substrate

10. As a result, there are fundamental differences between the positioning of the semiconductor layers DL and d<sub>0</sub> of Ono and the light absorbing film of the present invention. Also, claims 1 and 12 of the present invention recite “a first light absorbing film under the gate electrode.”

Further, even though Ono discusses that a semiconductor layer exhibits a light absorbing function, the main function of the semiconductor layer in the transistor is to generate a channel where current flows. Accordingly, the semiconductor layer is formed to constitute an active layer of the transistor. Therefore, since there is no reason to form an active layer under the gate electrode, and it is unobvious to form a semiconductor layer under the gate electrode to absorb light.

The Examiner turns to Chang for teachings pertaining to an ohmic contact layer. The Examiner turns to Onishi for teachings pertaining to indium tin oxide (ITO). The Examiner turns to Lee for teachings pertaining aluminum or chromium electrode material to reject claims 9-11, 17 and 18, but the cancellation of these claims moot this rejection. However, these teachings of Chang, Onishi and Lee fail to address the deficiencies of the Munakata, Umemoto and Ono in suggesting a claimed embodiment of the invention.

Further, at page 5, line 3 and at page 6, line 19 of the Office Action, the Examiner asserts that sealing the substrates is inherent in the applied art. However, inherency is not bar to patentability.

Accidental results not intended and not appreciated do not constitute anticipation. Eibel Processing Co. v. Minnesota and Ontario Paper Co., 261 US 45 (1923); Mycogen Plant Science, Inc. v. Monsanto Co., 243 F.3d 1316, 1336, 5 USPQ2d 1030, 1053 (2001). Further, the Federal Circuit stated in In re Robertson, that “to establish inherency, extrinsic evidence must make clear that the missing descriptive matter was necessarily present in the thing described in the reference, and would be so recognized by persons with ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a set of circumstances is not sufficient.” In re Robertson, 169 F.3d 743, 745, 49 USPQ2d 1949 (Fed. Cir. 1999). Further, it has been held that the mere fact that a certain thing may result from a given set of circumstances is not sufficient, and occasional results are not inherent. MEHL/Biophile International v. Milgraum, 192 F.3d 1362, 1365, 52 USPQ2d 1303 (Fed. Cir. 1999).

Yet further, at various places in the Office Action, the Examiner proffers arguments that by turning the liquid crystal display upside down, a second light source will become available or that the backlight will somehow become a front light. However, as is well known in the art, a liquid crystal display will function as intended in any orientation.

Therefore, as shown above, any combination of Munakata, Ono, Chang, Onishi and Lee would fail to motivate one having ordinary skill in the art to

produce a claimed embodiment of the invention. A *prima facie* case of obviousness has thus not been made.

These rejections are overcome and withdrawal thereof is respectfully requested.

### **Conclusion**

All of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding rejections and that they be withdrawn. It is believed that a full and complete response has been made to the outstanding Office Action, and as such, the present application is in condition for allowance.

If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone Robert E. Goozner, Registration No. 42,593, at (703) 205-8000, in the Washington, D.C. area.

Prompt and favorable consideration of this Amendment is respectfully requested.

Application No.: 09/633,782  
Amendment of July 6, 2005  
Response to Office Action of April 6, 2005

Docket No.: 3430-0129P

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Dated: July 6, 2005



Respectfully submitted,

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